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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,666	10/31/2003	Paul J. Husted	ATH-0137	1028

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BEVER HOFFMAN & HARMS, LLP
2099 GATEWAY PLACE
SUITE 320
SAN JOSE, CA 95110

EXAMINER	
LEE, SIU M	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/698,666	HUSTED, PAUL J.	
	Examiner	Art Unit	
	Siu M. Lee	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,14-16,21 and 30-39* is/are rejected.

7)☒ Claim(s) *4-13,17-20 and 22-29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 17, paragraph 0055, lines 1, 4 and page 18, line 1, the application numbers of the application is missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 30 –39 are rejected under 35 U.S.C. 101 because the claimed subject matter is directed to a computer software program. A computer program per se, are neither computer components nor statutory processes, as they are not "acts" being performed. A computer program is merely a set of instruction capable of being executed by a computer, the computer program itself is not a process. Therefore, a computer software program is a nonstatutory functional descriptive material.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 21, 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Sills et al. (US 6,690,746 B1).

(1) Regarding claim 1:

Sills et al. discloses a method comprising:

beginning demodulation of the received signal using components associated with each potential type of modulation (signal classifier 13 has a number of modules (module 1 – module N) in block 13 of figure 1 and figure 2 is an example of the signal classifier in figure 1), each associated with a different type of signal modulation (as shown in figure 2, each module of the signal classifier 13 is associated with a different type of signal modulation; e.g. FSK, OOK, PSK/QAM, MSK, analog signal, column 5, lines 48-55);

providing an identification value (confidence data) to a voting block (confidence analyzer 14 in figure 1) for each potential type of modulation based on the received signal (the output of each module of signal classifier 13 includes the measured parameters, the demodulated signal, and the confidence data, column 5, lines 65-67); and

using a technique in the voting block to determine the modulation type, wherein the technique is based at least on the identification values (confidence analyzer 14 receives a confidence rating for each of the candidate signal detected by module 21-25

in figure 2, based on these confidence ratings, as well as other built-in logic, it determines the best candidate from the candidate signal type, column 6, lines 8-11).

(2) Regarding claim 21:

Sills et al. discloses a system comprising:

modulator identifiers (signal classifier/demodulator 13, module 1- module N in figure 1) for providing identification values (confidence level data from module 1 to module N of the signal classifier/demodulator 13) for potential types of modulation based on the received signal (column 5, lines 38-47); and

a voting block (confidence analyzer 14 in figure 1) for determining the modulation, wherein the voting block uses a technique based at least on the identification values (column 6, lines 8-11).

(3) Regarding claim 30:

Sills et al. discloses a computer software program (signal recognizer 10 and the various element of fig. 1 are different processes within an integrated software system that comprises signal recognizer 10, column 4, lines 24-26) for determining a modulation type of a received signal, the computer software program comprising:

code for providing an identification value (confidence level data from module 1 to module N of the signal classifier/demodulator 13) for each potential type of modulation based on the received signal (as shown in figure 2, each module of the signal classifier 13 is associated with a different type of signal modulation; e.g. FSK, OOK, PSK/QAM, MSK, analog signal, column 5, lines 48-55); and

code for using a technique to determine the modulation, wherein the technique is based at least on the identification values (using a confidence analyzer 14 to determine the modulation, confident analyzer 14 receives a confidence rating for each candidate signal detected by modules 21-25 in classifier/demodulator 13, based on these confidence ratings, as well as other built-in logic, the confidence analyzer determines the best candidate from the candidate signal types, column 6, lines 8-11).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sills et al. (US 6,690,746 B1) in view of Li et al. (US 2004/0030530 A1).

Sills discloses all the subject matter as discuss in claim 1 except wherein the identification value includes a normalized correlation value based on characteristics of the type of modulation.

However, Li et al. discloses wherein the identification value includes a normalized correlation value based on characteristics of the type of modulation (figure 1 illustrated a primary steps for DSSS detection in 802.11a/g system, in step 120, calculate a sequence of correlation measures {C(n)}, between the sample sequence {r(n)} from a newly arrived network packet and Barker sequence, in step 150, normalize

the maximum of the {Am(N)} sequence with respect to the statistic of the {r(n)} sequence and then determine whether the newly arrived network packet comprises the DSSS PLCP preamble based on a comparison between the normalized maximum and a predetermined threshold, paragraph 0024 – paragraph 0031).

It is desirable wherein the identification value includes a normalized correlation value based on characteristics of the type of modulation because it provides a low false alarm probability to ensure a good packet error rate for high network throughput (paragraph 0007, lines 11-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Li et al. in the method of Sills et al. to improve the efficiency of the method.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sills et al. (US 6,690,746 B1) in view of Apostolos et al. (US 4,166,980).

Sills et al. discloses all the subject matter as discuss in claims 1 and 14 except the identification value includes an absolute modulation-specific correlation value.

However, Apostolos et al. discloses the identification value includes an absolute modulation-specific correlation value (Apostolos et al. discloses a method of generating histograms which is a diagram, correlation or pattern which is characteristics of the modulation type, such as FSK and PSK, column 3, lines 9-11, as this histogram is always a positive value, it is inherent that it is an absolute modulation-specific correlation value).

It is desirable for the identification value includes an absolute modulation-specific correlation value because it requires less time for signal acquisition (column 3, lines 27-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Li et al. in the method of Sills et al. to improve the performance of the method.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sills et al. (US 6,690,746 B1) in vie of Ueda (US 5,644,597).

Sills et al. discloses a method comprising:

beginning demodulation of a received signal using receiver components associated with each potential type of modulation (signal classifier 13 has a number of modules (module 1 – module N) in block 13 of figure 1 and figure 2 is an example of the signal classifier in figure 1) (as shown in figure 2, each module of the signal classifier 13 is associated with a different type of signal modulation; e.g. FSK, OOK, PSK/QAM, MSK, analog signal, column 5, lines 48-55).

providing an identification value (confidence data) to a voting block (confidence analyzer 14 in figure 1) of the receiver for each potential type of modulation based on the received signal (the output of each module of signal classifier 13 includes the measured parameters, the demodulated signal, and the confidence data, column 5, lines 65-67);

using a technique in the voting block to determine an actual modulation of the received signal, wherein the technique is based at least on the identification values

(confidence analyzer 14 receives a confidence rating for each of the candidate signal detected by module 21-25 in figure 2, based on these confidence ratings, as well as other built-in logic, it determines the best candidate from the candidate signal type, column 6, lines 8-11).

Sills fails to disclose deactivating receiver components associated with modulations other than that of the determined modulation.

However, Ueda discloses deactivating components other than that of the determined one (comparator 124 outputs the result of selection to the selecting circuit and outputs a stop signal to each of the remaining three adaptive equalizers which have not been selected, the three equalizer stop the equalization of the remaining random data in response to the stop signal, column 36, lines 14-19).

It is desirable to deactivating receiver components associated with modulations other than that of the determined modulation because it can reduce power consumption by turning off the component that is not needed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Ueda in the system of Sills et al. to increase the power efficiency of the system.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sills et al. (US 6,690,746 B1) in vie of Ueda (US 5,644,597) as applied to claim 14 above, and further in view of Li et al. (US 2004/0030530 A1).

Sills et al. and Ueda et al. disclose all the subject matter as discuss in claim 14 except wherein the identification value includes a normalized correlation value based on characteristics of the potential modulation.

However, However, Li et al. discloses wherein the identification value includes a normalized correlation value based on characteristics of the potential modulation (figure 1 illustrated a primary steps for DSSS detection in 802.11a/g system, in step 120, calculate a sequence of correlation measures {C(n)}, between the sample sequence {r(n)} from a newly arrived network packet and Barker sequence, in step 150, normalize the maximum of the {Am(N)} sequence with respect to the statistic of the {r(n)} sequence and then determine whether the newly arrived network packet comprises the DSSS PLCP preamble based on a comparison between the normalized maximum and a predetermined threshold, paragraph 0024 – paragraph 0031).

It is desirable wherein the identification value includes a normalized correlation value based on characteristics of the potential modulation because it provides a low false alarm probability to ensure a good packet error rate for high network throughput (paragraph 0007, lines 11-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Li et al. in the method of Sills et al. and Ueda to improve the efficiency of the method.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sills et al. (US 6,690,746 B1) in vie of Ueda (US 5,644,597) as applied to claim 14 above, and further in view of Apostolos et al. (US 4,166,980).

Sills et al. and Ueda et al. disclose all the subject matter as discuss in claim 14 except the identification value includes an absolute modulation-specific correlation value.

However, Apostolos et al. discloses the identification value includes an absolute modulation-specific correlation value (Apostolos et al. discloses a method of generating histograms which is a diagram, correlation or pattern which is characteristics of the modulation type, such as FSK and PSK, column 3, lines 9-11, as this histogram is always a positive value, it is inherent that it is an absolute modulation-specific correlation value).

It is desirable for the identification value includes an absolute modulation-specific correlation value because it requires less time for signal acquisition (column 3, lines 27-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Li et al. in the method of Sills et al. and Ueda to improve the performance of the method.

Allowable Subject Matter

11. Claims 4-10, 17-20, 22-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Isaacson et al. (US 4,845,707) discloses a frequency division multiplex/FM modulation recognition system. Bahl et al. (US 6,957,086 B2) discloses a method for wireless capability discovery and protocol negotiation and wireless device including same. Powell II et al. (US 6,571,083 B1) discloses a method and apparatus for automatic simulcast correction for a correlation detection. Lindoff et al. (US 6,463,107 B1) discloses a methods and apparatus for synchronization and modulation type detection.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M. Lee
3/12/2007

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER